

Claims

- [c1] 1. A system adapted to alter a feature of a substrate, said system comprising:
- (a) a probe having a plurality of channels through said probe to exit at an apex of said probe,
 - (b) means for maneuvering said apex of said probe to a site proximate to a target feature to be altered, and
 - (c) a source of a first chemical coupled to a first said channel for delivery of said chemical through said apex, and
 - (d) a source of at least one of a second chemical, a diluting fluid, an expulsion gas, and suction, coupled to a second channel for delivery through said apex.
- [c2] 2. The system of claim 1 wherein said second channel is coupled to a source of a second chemical, and said second chemical is adapted to mix with said first chemical after exiting said apex to form a reactive species.
- [c3] 3. The system of claim 1 wherein said second channel is coupled to a source of diluting fluid, said diluting fluid adapted to dilute effluent from a reaction at said site to spatially confine an effect of said reaction.

- [c4] 4. The system of claim 1 wherein said second channel is coupled to a source of suction, said suction being adapted to remove effluent from a reaction at said site to spatially confine an effect of said reaction.
- [c5] 5. The system of claim 4 wherein said suction is adapted to remove hot effluent from said reaction.
- [c6] 6. The system of claim 4 wherein said suction is adapted to remove a product of said reaction.
- [c7] 7. The system of claim 1 wherein said channels are arranged parallel to each other in said probe.
- [c8] 8. The system of claim 1 wherein said channels are arranged concentrically to each other in said probe.
- [c9] 9. A method of altering a feature of a substrate, said method comprising:
- (a) delivering a chemical for assisting in a reaction to a site proximate to a target feature to be altered through a channel of a probe, said channel having an exit at an apex of said probe; and
 - (b) providing at least one of a second chemical, a diluting fluid, an expulsion gas, and suction to said site through a second channel of said probe,
- wherein said at least one of said second chemical, said diluting fluid, and said expulsion gas aids in at least one

of promoting and/or managing said reaction at said site.

- [c10] 10. The method of claim 9 wherein a second chemical is provided through said second channel, such that said second chemical mixes with said first chemical to form a reactive species after exiting said apex.
- [c11] 11. The method of claim 9 wherein a diluting fluid is provided through said second channel, said diluting fluid diluting effluent from a reaction at said site so as to spatially confine an effect of said reaction.
- [c12] 12. The method of claim 9 wherein suction is provided by said second channel, said suction locally removing effluent from a reaction at said site so as to spatially confine an effect of said reaction.
- [c13] 13. The method of claim 12 wherein said suction locally removes hot effluent from said reaction to thereby provide spatial confinement when said reaction is exothermic.
- [c14] 14. The method of claim 12 wherein said suction removes a product of said reaction so as to spatially confine distribution of said product due to said reaction.
- [c15] 15. A method of exothermically etching a very small surface area of an organic dielectric material on a substrate,

said method comprising:

(a) delivering a chemical for assisting in an exothermic reaction to a site proximate to a feature comprising organic dielectric on said substrate through a channel of a probe exiting at in an apex of said probe; and
(b) providing at least one of a second chemical, a diluting fluid, an expulsion gas, and suction to said site through a second channel of said probe,
wherein said at least one of said second chemical, diluting fluid, expulsion gas, and suction aids in spatially confining an effect of said exothermic reaction.

[c16] 16. The method of claim 15 wherein a second chemical is provided through said second channel, such that said second chemical mixes with said first chemical to form a reactive species after exiting said apex.

[c17] 17. The method of claim 15 wherein a diluting fluid is provided through said second channel, said diluting fluid diluting effluent from said reaction so as to spatially confine an effect of said reaction.

[c18] 18. The method of claim 15 wherein suction is provided by said second channel, said suction locally removing effluent from said reaction so as to spatially confine an effect of said reaction.

[c19] 19. The method of claim 15 further comprising illuminating said site with ultraviolet radiation from a light guide proximate to said site.

[c20] 20. The method of claim 19 wherein said light guide is integral to said probe.